

IN THE CLAIMS

Please cancel claims 5, 6, 9 thru 11, 13 thru 15, 17, 25 and 16 without prejudice or disclaimer, amend claims 1, 16, 18, 20, 21, 23 and 24, and add claims 27 and 28, as follows:

1 1. (Currently Amended) A driving circuit of a DC microwave oven having an
2 inverting unit for converting a DC voltage of a DC power supply into an AC voltage by
3 driving pulses, a high voltage transformer for transforming the AC voltage applied by the
4 driving of the inverting unit and supplying the transformed AC voltage to a magnetron, and
5 a pulse driving unit for generating the driving pulses, said driving circuit comprising:

6 an excessive current detecting unit for detecting a current supplied from the DC power
7 supply to the inverting unit, and for outputting an excessive current detecting signal to the
8 pulse driving unit to cut off the generation of the driving pulses of the pulse driving unit
9 when the detected current corresponds to an excessive current; and

10 an excessive current maintaining unit for continuously maintaining the excessive
11 current detecting signal when the excessive current detecting signal is outputted by the
12 excessive current detecting unit;

13 wherein the excessive current maintaining unit includes a feedback transistor turned
14 on by an input of a feedback control signal outputted from the pulse driving unit, and a diode
15 connected between the feedback transistor and the comparison part for continuously
16 outputting to the comparison part a feedback signal higher than a reference signal in
17 correspondence with turn-on of the feedback transistor, the pulse driving unit outputting the

18 feedback control signal in response to outputting of the comparison result signal comprising
19 the excessive current detecting signal by the comparison part.

1 2. (Previously Presented) The driving circuit as claimed in claim 1, wherein the
2 excessive current detecting unit includes:

3 an excessive current detecting part for detecting a current supplied to the inverting
4 unit; and

5 a comparison part for comparing a detecting signal outputted from the excessive
6 current detecting part with a predetermined reference signal, and for outputting a comparison
7 result signal, wherein the comparison result signal comprises the excessive current detecting
8 signal when the detected current corresponds to an excessive current, and wherein the pulse
9 driving unit stops the generation of the driving pulses when the comparison result signal of
10 the comparison part comprises the excessive current detecting signal.

1 3. (Previously Presented) The driving circuit as claimed in claim 2, further
2 comprising:

3 an amplification part for amplifying the detecting signal outputted from the excessive
4 current detecting part and applying the amplified detecting signal to the comparison part.

1 4. (Previously Presented) The driving circuit as claimed in claim 2, wherein the
2 excessive current detecting part includes plural bipolar transistors driven with the same

3 periods as the inverting unit with an input of the driving pulses.

Claims 5 and 6. (Canceled)

1 7. (Previously Presented) A driving circuit of a DC microwave oven having an
2 inverting unit for converting a DC voltage of a DC power supply into an AC voltage by
3 driving pulses, a high voltage transformer for transforming the AC voltage applied by the
4 driving of the inverting unit and supplying the transformed AC voltage to a magnetron, and
5 a pulse driving unit for generating the driving pulses, said driving circuit comprising:

6 a switching unit mounted to turn on and off voltage supply to the pulse driving unit
7 according to the opening and closing operations of a cooking chamber door, the switching
8 unit comprising:

9 a door sensing switch turned on and off according to the opening and closing
10 operations, respectively, of the cooking chamber door;

11 a primary interlock switch connected in a voltage supply path to a voltage input
12 terminal of the pulse driving unit so as to be turned on and off according to the opening and
13 closing operations, respectively, of the cooking chamber door; and

14 a secondary interlock switch connected in series with the primary interlock switch in
15 the voltage supply path to the voltage input terminal of the pulse driving unit so as to be
16 turned on and off according to the switching states of the door sensing switch.

1 8. (Original) The driving circuit as claimed in claim 7, further comprising: a voltage
2 regulator for regulating the DC voltage of the DC power supply and supplying the regulated
3 DC voltage to the voltage input terminal of the pulse driving unit through the primary
4 interlock switch and the secondary interlock switch.

Claims 9-15. (Canceled)

1 16. (Currently Amended) A driving circuit of a DC microwave oven having an
2 inverting unit for converting a DC voltage of a DC power supply into an AC voltage by
3 driving pulses, a high voltage transformer for transforming the AC voltage applied by the
4 driving of the inverting unit and supplying the transformed AC voltage to a magnetron, and
5 a pulse driving unit for generating the driving pulses, said driving circuit comprising:

6 a switch monitor unit for cutting off supply of a voltage to the high voltage
7 transformer from the DC power supply when a cooking chamber door is in an open state; and
8 an excessive current detecting/maintaining unit for detecting a current provided by
9 the DC power supply through the switch monitor unit, and for outputting an excessive
10 current detecting signal to the pulse driving unit to cut off generation of the driving pulses
11 by the pulse driving unit;

12 wherein the switch monitor unit includes a plurality of monitor switches connected
13 to a primary coil of the high voltage transformer for selectively short-circuiting the primary
14 coil of the high voltage transformer, and switched according to opening and closing

15 operations of the cooking chamber door, and a fuse mounted in a voltage supply path
16 connecting the plurality of monitor switches and the DC power supply.

Claim 17. (Canceled)

1 18. (Currently Amended) The driving circuit as claimed in claim [[17]] 16, wherein
2 first ends of the plurality of monitor switches are connected [[with]] to the DC power supply
3 through the fuse, and second ends of the plurality of monitor switches are connected between
4 the inverting unit and the primary coil of the high voltage transformer.

Claim 19. (Canceled)

1 20. (Currently Amended) [[The]] A driving circuit as claimed in claim 16, of a DC
2 microwave oven having an inverting unit for converting a DC voltage of a DC power supply
3 into an AC voltage by driving pulses, a high voltage transformer for transforming the AC
4 voltage applied by the driving of the inverting unit and supplying the transformed AC voltage
5 to a magnetron, and a pulse driving unit for generating the driving pulses, said driving circuit
6 comprising:

7 a switch monitor unit for cutting off supply of a voltage to the high voltage
8 transformer from the DC power supply when a cooking chamber door is in an open state; and
9 an excessive current detecting/maintaining unit for detecting a current provided by

10 the DC power supply through the switch monitor unit, and for outputting an excessive
11 current detecting signal to the pulse driving unit to cut off generation of the driving pulses
12 by the pulse driving unit;

13 wherein the switch monitor unit includes a three-terminal monitor switch for selecting
14 one of a first loop connecting the DC power supply and [[a]] the fuse, and a second loop
15 connected to the excessive current detecting/maintaining unit by switching operations of the
16 three-terminal monitor switch.

1 21. (Currently Amended) The driving circuit as claimed in claim 16, wherein the
2 excessive current detecting/maintaining unit includes:

3 an excessive current detecting part for detecting a current supplied to the inverting
4 unit;

5 a comparison part for comparing a detecting signal outputted from the excessive
6 current detecting part with a predetermined reference signal, and for outputting a comparison
7 result signal; and

8 a feedback part for outputting to the comparison part a feedback signal exceeding the
9 predetermined reference signal for control of the pulse driving unit.

1 22. (Original) The driving circuit as claimed in claim 21, further comprising:

2 an amplifying unit for amplifying the detecting signal outputted from the excessive
3 current detecting part and applying the amplified detecting signal to the comparison part.

1 23. (Currently Amended) A driving method of a DC microwave oven having an
2 inverting unit driven by driving pulses for converting a DC voltage of a DC power supply
3 into an AC voltage, a high voltage transformer for transforming the AC voltage applied by
4 the driving of the inverting unit and supplying the transformed AC voltage to a magnetron,
5 a pulse driving unit for generating the driving pulses for driving the inverting unit, and a
6 switching unit for switching on and off voltage supply to the pulse driving unit from the DC
7 power voltage, said method comprising steps of:

8 a) driving the pulse driving unit by controlling the switching unit when a cooking
9 chamber door is closed and a cooking start selection signal is inputted;

10 b) detecting whether an excessive current is supplied to the high voltage transformer
11 through the inverting unit driven by the driving pulses generated by the pulse driving unit;

12 [[and]]

13 c) cutting off the AC voltage supply to the magnetron by stopping the driving of the
14 pulse driving unit when the excessive current is detected; and

15 d) providing a three-terminal monitor switch having a fixed terminal connected in a
16 voltage supply path connecting the inverting unit and the high voltage transformer, a first
17 contact selectively switched to the fixed terminal so as to be connected to the DC power
18 supply through a fuse, and a second contact selectively switched to the fixed terminal so as
19 to be connected to a unit for carrying out the detection of the excessive current when the
20 cooking chamber door is closed, the fixed terminal being switched to the second contact in

21 step b).

1 24. (Currently Amended) The driving method as claimed in claim 23, further
2 comprising the step of:

3 [[d]] forming a voltage supply path in parallel with the high voltage transformer
4 when the cooking chamber door is opened in a state wherein the excessive current is not
5 detected, and opening the voltage supply to the inverting unit from the DC power supply
6 when an excessive current flows in the voltage supply path formed in parallel with the high
7 voltage transformer.

Claims 25-26. (Canceled)

1 27. (New) The driving circuit as claimed in claim 16, further comprising a switching
2 unit mounted to turn on and off the voltage supply to the pulse driving unit according to
3 opening and closing operations of a cooking chamber door.

1 28. (New) The driving circuit as claimed in claim 20, further comprising a switching
2 unit mounted to turn on and off the voltage supply to the pulse driving unit according to
3 opening and closing operations of a cooking chamber door.